



A future rooted in Africa's soil

Environment, development and the search for sustainability

As the world's poorest region, beset with many ecological problems, Africa faces a tough battle in blending environmental and development concerns, as recommended by the UN Conference on Environment and Development (UNCED). Yet despite its grim statistics, the continent has grounds for hope. Besides significant untapped natural resources, Africa has yet to benefit fully from the creativity and perseverance of its people. If effectively harnessed, their knowledge of the environment and traditional productive practices could contribute greatly towards a new development approach based on integrating preservation of Africa's fragile ecological systems with the need to improve economic opportunities and living standards.

Such a concept of "sustainable development" argues that economic growth should be pursued only in a manner that is socially, economically and environmentally viable in the long term. It is different from the prevailing development models, largely supported by the donor community, which until recently have tended to focus narrowly on economic growth. But "sustainable development" is now gaining greater acceptance.

Unlike some other parts of the world where industrial pollution, acid rain or ozone depletion may be of foremost concern, Africans are preoccupied overwhelmingly with soil erosion, desertification, loss of trees, uncertain rainfall and a wide range of problems related to extreme poverty.

Trading off short-term economic gain against future environmental preservation will therefore be difficult to achieve in Africa. The dilemmas can be minimized, however, through strategies that rely on grassroots and community organizations. In many African countries, such groups are already seeking to influence governments and donors to pursue policies that adequately address people's concerns.

By Robin Sharp, with Mahamadou Koné

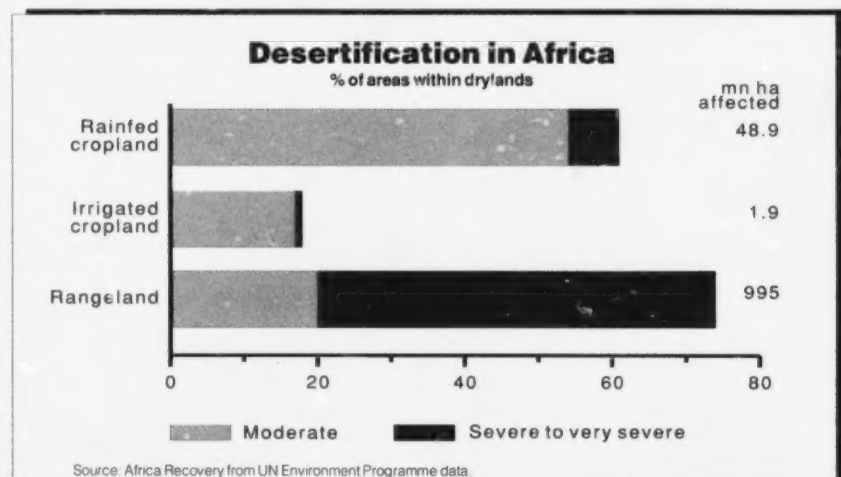
"The trees had become hydra-headed bronze statues so ancient that only blunt residual features remained on their faces, like anthills surviving to tell the new grass of the savannah about last year's brush fires." — Chinua Achebe, Anthills of the Savannah

As the people of Africa today confront a struggle for survival on many fronts, Achebe's timeless image speaks of an Africa burned to the bone but still nurturing the germs of new growth. This is a vision of renewal more needed than ever — and more demanding of regenerative strategies rooted in Africa's soil and cultures. In different countries and in varying degrees, the struggle is for food, for health, for somewhere to call home, for safety amid conflict, for fertile land to grow crops or keep animals. Above all, it is a struggle against the elements, against often hostile authorities and against the flawed advice of outsiders — a struggle for the people's right to a future of their own making.

Many of the environmental and development indicators for Africa point towards a continuing downward spiral. And this being the poorest continent in material terms, any trade-off between survival strategies and long-term sustainability puts the livelihoods, if not the lives, of tens of millions of people at risk. The task of balancing immediate

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This Briefing Paper was produced with the financial assistance of the United Nations Sudano-Sahelian Office (UNSO). The views expressed in the paper are those of the author and do not necessarily reflect those of UNSO or other organizations of the United Nations.



Africa: environment and development indicators

Country	GNP per capita 1990* (\$)	Population 1990 (mn)	Cultivated land per capita, 1990 (ha)	Percentage of total land		Food prod. per capita 1986-89 (1979-81=100)	Water use per capita 1990 (cu. m.)	Access to safe water 1988-90 (% of pop.)	Traditional fuel, 1989 (as % of total energy use)	Ann. ave. deforest. rate, 1981-85 (%)	Total forest lost (%)
				arid	semi-arid						
Algeria	2,058	24.96	0.30	92	3	99	161	71	3	2.3	n.a.
Angola	609	10.02	0.38	4	6	85	43	35	55	0.2	45
Benin	362	4.63	0.40	0	1	114	26	54	86	1.7	59
Botswana	2,049	1.30	1.06	62	38	68	98	53	n.a.	0.1	62
Burkina Faso	328	8.99	0.40	1	15	116	20	69	92	1.7	80
Burundi	211	5.47	0.24	0	0	98	20	38	92	2.7	88
Cameroon	941	11.83	0.59	0	1	96	30	32	49	0.4	59
Cape Verde	894	0.37	0.11	100	0	84	148	71	0	n.a.	n.a.
Central Afr. Rep.	393	3.03	0.66	0	0	90	27	12	86	0.2	55
Chad	189	5.67	0.56	87	7	101	36	n.a.	92	0.6	80
Comoros	482	0.55	0.18	0	0	121	15	n.a.	0	n.a.	n.a.
Congo	1,007	2.27	0.07	0	0	97	20	38	41	0.1	49
Côte d'Ivoire	729	11.99	0.31	0	0	95	68	18	59	5.2	78
Djibouti	n.a.	0.40	0.00	100	0	n.a.	28	47	0	n.a.	0
Egypt	603	52.42	0.05	100	0	108	1202	89	4	n.a.	n.a.
Equatorial Guinea	325	0.35	0.65	0	0	n.a.	11	n.a.	75	0.2	50
Ethiopia	118	49.24	0.28	38	16	90	48	19	91	0.3	86
Gabon	3,234	1.17	0.39	0	0	81	51	68	35	0.1	35
Gambia	260	0.86	0.21	0	0	94	33	77	77	2.4	91
Ghana	392	15.02	0.16	0	0	108	35	57	67	0.8	80
Guinea	428	5.75	0.13	0	0	90	115	32	72	0.8	69
Guinea-Bissau	179	0.96	0.35	0	0	108	18	25	67	2.7	80
Kenya	388	24.03	0.10	71	14	102	48	30	79	1.7	71
Lesotho	470	1.77	0.18	15	13	79	34	48	n.a.	n.a.	67
Liberia	n.a.	2.57	0.14	0	0	95	54	55	78	2.3	87
Libya	5,315	4.54	0.47	98	1	107	623	94	1	n.a.	n.a.
Madagascar	233	12.00	0.24	5	0	93	1675	22	82	1.2	75
Malawi	195	8.75	0.28	0	0	85	22	56	90	3.5	56
Mali	271	9.21	0.23	64	16	97	159	38	87	0.5	78
Mauritania	501	2.02	0.10	94	5	88	473	66	0	2.4	90
Mauritius	2,263	1.08	0.10	0	0	101	415	95	52	3.3	n.a.
Morocco	948	25.06	0.37	54	10	122	501	61	5	0.4	n.a.
Mozambique	77	15.65	0.20	8	0	84	53	24	89	0.8	57
Namibia	1,029	1.78	0.40	78	21	92	77	n.a.	n.a.	0.2	n.a.
Niger	308	7.73	0.47	86	13	86	44	n.a.	73	2.6	80
Nigeria	266	88.50*	0.29	0	8	98	44	48	62	2.7	76
Rwanda	311	7.23	0.16	0	0	78	23	64	88	2.2	80
Sao Tome & Prin.	393	0.12	n.a.	n.a.	n.a.	85	n.a.	n.a.	n.a.	n.a.	n.a.
Senegal	708	7.32	0.71	7	14	106	201	54	51	0.5	82
Seychelles	4,541	0.07	n.a.	n.a.	n.a.	n.a.	n.a.	100	n.a.	n.a.	n.a.
Sierra Leone	237	4.15	0.43	0	0	90	99	42	76	0.3	88
Somalia	n.a.	7.49	0.14	93	7	97	167	37	85	0.1	67
Sudan	374	25.20	0.50	55	11	88	1089	21	81	1.1	74
Swaziland	816	0.78	0.21	0	26	99	414	53	n.a.	n.a.	56
Tanzania	129	27.31	0.19	7	15	89	36	56	90	0.3	40
Togo	405	3.53	0.41	0	0	89	40	71	43	0.7	65
Tunisia	1,419	8.18	0.57	86	16	96	325	83	15	1.7	n.a.
Uganda	276	18.79	0.36	0	5	86	20	20	67	0.8	79
Zaire	228	35.56	0.22	0	0	85	22	34	78	0.2	57
Zambia	418	8.45	0.62	0	2	96	86	59	58	0.2	30
Zimbabwe	644	9.70	0.29	8	41	94	129	n.a.	25	0.4	56

* figures in italics are for 1989 (Uganda 1988) + 1992 government census; per capita figures not adjusted.

Source: UN Africa Recovery adapted from UNDP/World Bank African Development Indicators, UN World Population Chart, 1990, World Resources Institute, World Resources, 1992-93, FAO, Production Yearbook, 1989, UNDP, Human Development Report, 1992.

needs against those of future generations is one for which there is no objective moral yardstick.

A document prepared for the World Commission on Environment and Development — the Brundtland Commission — spoke of negative trends “setting the stage for a human tragedy of vast proportions.” And yet, for those who will turn their eyes from present troubles, the seeds of potential regeneration are visible all over Africa.

But let us start with the measurable symptoms of Africa’s crisis, in order then to assess what “sustainable development” may mean for Africa and what measures have the best hopes of making it a reality. The UN Economic Commission for Africa (ECA),¹ has set out the symptoms succinctly:

- Africa has the largest number of the poorest countries in the world: 32 of the 47 countries classified by the UN as “least developed”;
- Africa is the only continent where economic production per person declined consistently throughout the 1980s;
- Africa’s agriculture depends on basic technology;
- African industry is overly dependent on imports of capital, skilled labour, technology and spare parts; and
- The continent contains many small states with very small populations and markets.

To these drawbacks can be added very low levels of productivity, a threatened collapse of the social fabric in respect of education, health, shelter and employment and natural catastrophes and drought. There are also crises caused by an unfavourable world economic environment, by systems of government that have marginalized the people and by inadequacies of economic management. Indebtedness has risen steadily over the past decade, while food production per person has fallen by about 10 per cent.

Has this decline occurred despite or because of development strategies put in place largely at the behest of international donors? The only certain fact is that foreign interventions — whether with recipes for economic reform, technical assistance or large aid packages — have failed to prevent a steady worsening of the conditions and quality of life for many of the people they sought to help.

Now, however, with increased international awareness of the linkage between environment and development — heightened by the discussions surrounding the June 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro — many in the international community believe that “sustainability” is a formula which can restore faith in development after the failure of the past 30 years. Put simply, “sustainable development” is a coded way of saying that

economic growth — in the past often equated with development — should only be an acceptable goal where it is socially, economically and environmentally viable in the long term.

In the best circumstances, sustainable development can provide a conceptual framework for more holistic — and more participatory — approaches by governments and independent agencies in Africa. It can harmonize well with the continental shift towards more democratic systems of government. For anything to be sustainable, however, what is required is a degree of equilibrium, some basically stable conditions on which to build. In many parts of Africa, uncertain climate and fluctuations in the external economic environment conspire,

Foreign aid and advice have failed to prevent a steady worsening of the conditions and quality of life for many people they sought to help.

time and again, to disrupt any such stability. And it could be disrupted again when the North finds genetically engineered substitutes for coffee and the other export crops upon which Africa depends for much of its foreign currency earnings.

In response to such multiple problems, however, there is an inherent danger in an unfocused, all-inclusive approach to sustainable development as a policy strategy. Attempts to cover every aspect of socio-economic activity can cause abnormal swelling in the prescriptions as much as in the patient. The danger of aggregating problems in this way is that it favours just the kind of top-heavy, sledgehammer solutions that most development analysts now admit have not worked. Aggregates may be necessary to define the scale of problems, but they are a false guide to appropriate responses. Any grand designs to achieve sustainable development must be broken down into small packages of a size and shape that ordinary people can not only comprehend but control themselves. This is now widely accepted, but by no means so widely observed. Yet it is futile, if not cynical, to talk participation to peasants whose lives are subject to forces of marginalization beyond their control.

Equally, the relative economic advancement of other societies can be used to measure the extent of poverty in Africa but is of little use in framing policies to address it. Indeed poverty, to the extent that it leaves people unfettered by consumerism and all that goes with it, may even give Africa more freedom of manoeuvre than other parts of the world in seeking viable and home-grown strategies for the future. As the region’s intellectuals are increasingly coming to recognize, Africa has little to lose in designing its own alternatives.

Broadly, there are three principal factors conditioning a new, sustainable approach to development and natural resource

1. United Nations Economic Commission for Africa (ECA), *African Alternative Framework to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation: A Popular Version* (Addis Ababa: 1989).

management: the level and interplay of natural and human resources; national policies and institutions; and external constraints relating to debt, trade, aid and technology choice.

I. Natural and human resources

Africa is the second-largest of the world's continents, occupying one-fifth of total land surface. It is a continent rich in resources, and while some of these have become dangerously

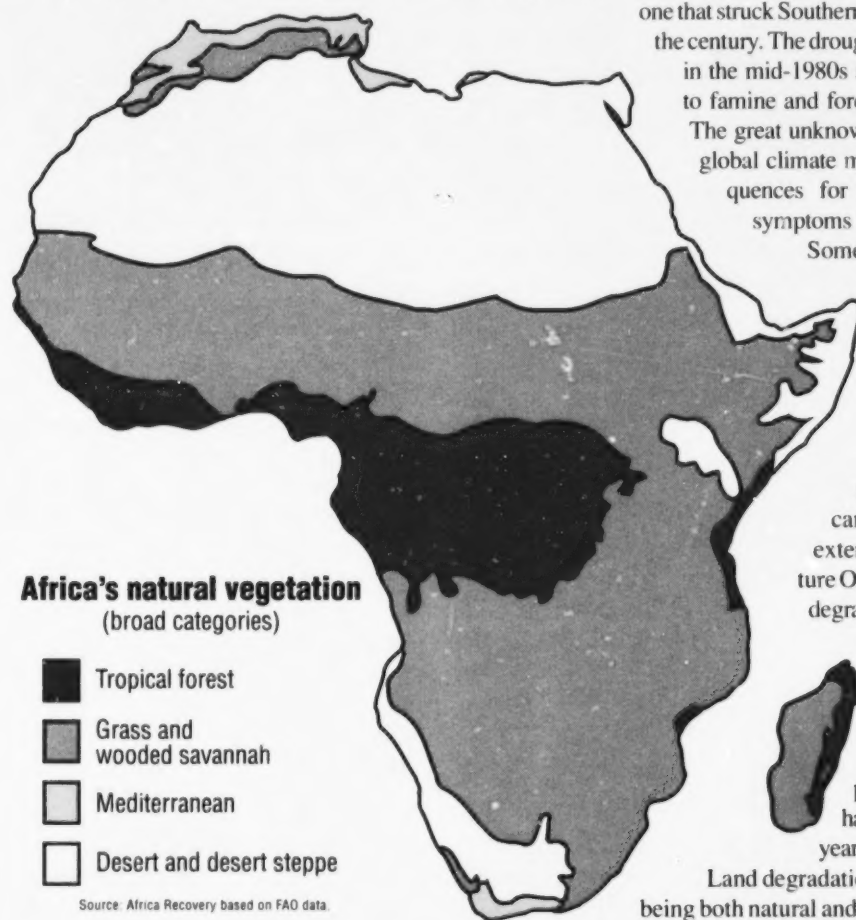
20 years. Since 1900, Côte d'Ivoire has sacrificed 78 per cent of its forest cover, while Ethiopia, once rich in forest and woodland, has hardly any left.

Rainfall is the single most important environmental factor for Africa, since over large parts of the continent it is scarce and erratic. Mean rainfall totals for major parts of the Sudano-Sahelian zone over 1960-90 fell by about 25 per cent compared with the previous 30 years — a decline unequalled anywhere else in the world. There have also been devastating droughts, with the one that struck Southern Africa in 1992 the worst since the turn of the century. The drought that swept the Sahel and other regions in the mid-1980s subjected as many as 35 million people to famine and forced 10 million to abandon their homes. The great unknown is the extent to which changes in the global climate may affect Africa and the precise consequences for different countries if and when the symptoms become acute (see box on page 6).

Some 65 per cent of Africa's total land area is desert or drylands, with only limited agricultural potential. Although in 1987-89 only about 186 mn hectares out of Africa's approximately 830 mn hectares of cultivable land were actually under crop, much of the remainder is already in use for forestry or grazing or can be brought under cultivation only with extensive inputs. The UN Food and Agriculture Organization (FAO) warns that further soil degradation will progressively exclude larger areas from food production unless adequate conservation measures are implemented. Because of both productivity constraints and high population growth rates, the food produced per person in sub-Saharan Africa as a whole has been falling at the rate of 1 per cent a year since the early 1970s.

Land degradation is a complex phenomenon, its causes being both natural and man-made. In its most acute form it is a process which reduces the productive potential of land beyond the point of natural recovery and beyond economically viable reclamation. This is seen most often in Africa's drylands and is often referred to as "desertification."

The drought of the 1970s led to a UN Conference on Desertification in 1977, at which an alarming picture was presented of global land loss and fast-expanding deserts. For the next several years, studies based on this analysis purported to show the Sahara desert advancing southwards by anything up to 10 kilometres a year, forcing the abandonment of settlements and causing a progressive loss of vegetation. More recently, however, many scientists and some international organizations have come to the view that there is little hard



depleted, others remain relatively unharmed. Much of Africa's cultivable land remains uncultivated, and the continent has a wealth of genetic resources, great rivers and still huge tracts of tropical forest. Much less of the rainforest has been destroyed than in Latin America or Southeast Asia and, at present rates of clearing, it has been estimated that it should last for centuries (see graph on page 5).

In recent times, nevertheless, Africa's endowment of natural resources has been savagely eroded by changes in the climate and by human exploitation. Many villages of the Sahel have lost from one-third to half their cultivable land in the past

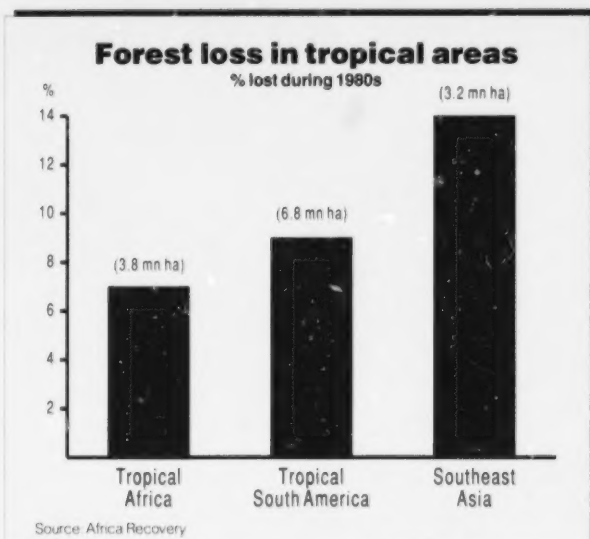
data on the extent, causes or impact of desertification.² For instance, no signs of persistent dryland degradation have been observed in the northern Sahel, where rainfed agriculture is not practised. But in the transitional zone between the northern and southern Sahel, where crop production does occur, evidence of severe land degradation has been found.

The human causes of land loss are of special concern. The chain of events very often starts with people cutting more wood from a piece of land than it can regenerate. As wood becomes scarce or expensive, crop residues and animal dung which would normally be used to fertilize the land are burned as fuel, so the soil deteriorates. Vegetation begins to disappear, the crop residues are needed to feed livestock, and the soil is left with nothing to protect it from wind and rain. The problem is compounded by putting land under more continuous cultivation and reducing or eliminating the fallow periods the land needs. Result: the soil crumbles and produces less than it did before.

In the case of pasture land — of which Africa has more relative to population than any other continent — overgrazing by livestock (whose numbers have nearly doubled since 1950, to an average 590 mn head in 1986-88) has been regarded as a major cause of degradation. There were obvious examples. In the Sudan, where limited water supply had restricted herds to a sustainable level, the introduction of permanent water-points meant that more animals could drink in a drought — leaving the land around trampled and bare. But rangeland ecologists have also been reappraising the conventional wisdom, and they conclude that grazing has been responsible for much less damage than drought and the dessication of soils.

Drought has wrought havoc with the livelihoods of Africa's nomadic herders, forcing many to abandon their centuries-old way of life. In Mauritania, which had a high nomadic population, a remarkable transition has taken place in one generation: more than 60 per cent of the people have — in the ugly development jargon — become "sedentarized." Largely because of the loss of their herds, they have been settled in one place and have taken up a farmer's hoe for the first time in their lives. But for pastoralists with no agricultural tradition, learning to farm in fragile, arid conditions is anything but easy. The United Nations Sudano-Sahelian Office (UNSO), which has been conducting research and experiments for several years to develop technical means to combat desertification, found that such methods would only be successful if combined with activities to ensure that the people gain control over their economic activities.

With more than 600 million people, Africa today is not over-populated in terms of absolute numbers. But nevertheless there are two critical problems. People and the resources which could support them are unevenly distributed between countries and between rural and urban areas, often leading to



excessive pressure on the most fragile environments. And secondly, population numbers are growing at a dizzy rate — at approximately 3 per cent annually, faster than anywhere else in the world. The pressure of numbers translates into more pressure on the land and an increasing scarcity of work: underemployment already affects 40 per cent of the active rural population.

At the same time, the worst economic and social consequences of the AIDS epidemic have yet to make themselves felt. According to the World Health Organization, the spread of AIDS could in many countries decimate the age groups, such as young adults, who are often the most economically productive members of society. As more people succumb to the disease, food production in stricken rural areas is expected to drop, creating further dependence on food imports and foreign aid.

II. Issues and opportunities

From this brief sketch of some of the conditions facing Africa's people and governments in their search for a sustainable future, it is possible to distil a number of key issues and to identify some of the constraints and opportunities they present.

Some of these issues are addressed directly by Agenda 21, the programme of action negotiated for UNCED; others are not. For reasons of space they can be presented here only as a selective checklist, with some indication of the constraints or opportunities in each case.

The marginalization of small farmers With few exceptions, the people who should be the backbone of Africa's economy, a large proportion of them women, are pushed onto the margins of economic life and given little support. Even when they are included in economic policy, they are often encouraged to adopt crops or farming practices liable to

2. United Nations Sudano-Sahelian Office, *Assessment of Desertification and Drought in the Sudano-Sahelian Region 1985-1991* (New York: 1992).

Climate change

If predictions about global warming prove correct — and the evidence for a sustained long-term trend, while considerable, so far remains inconclusive — semi-arid regions of the world, including the Horn of Africa, western areas of the Sahel and Southern Africa, would be among the most vulnerable. Some scientists predict a doubling of carbon dioxide in the atmosphere between now and 2025 on current trends, and foresee a resulting rise in average global temperatures of anything from 1.5 to 4.5 degrees Celsius over the next 60 years. Others believe that temperature changes may be more cyclical than part of any long-range trend.

Whatever the causes, climate change appears to be under way, many scientists argue. Its most immediate impact is likely to be in further fluctuations in rainfall patterns that are already erratic across much of the continent, whether as a result of global warming, shifting wind patterns or other phenomena.

In East and Southern Africa, declines in precipitation could substantially affect agricultural yields and grass growth, possibly affecting the carrying capacity of rangelands.

On the other hand, some expect an increase in mid-year rains in West and Northeast Africa, but think evaporation may also increase if temperatures rise. Agricultural output could actually rise in these regions if rainfall increases at a greater

rate than evaporation.

For poor farmers and their governments, climatic shifts would entail certain costs, due to the need to make changes in farming areas and in the types and location of crops. In humid regions, an increase in rainfall would help food and forest production, but could aggravate problems of nutrient leaching, soil erosion, weeds, flooding and crop losses before and after harvesting. In some dry and semi-arid regions, diminishing rainfall could adversely affect irrigation schemes and the viability of farming in some marginal areas. In Nigeria, a shortening of the rainy season has already been reported, with the consequence that crops which used to be harvested twice a year can now only be grown once. Farmers are reported to be abandoning crops such as yams.

In addition, a rise in global sea levels could have a severe impact on many countries, notably Nigeria, Mozambique, Kenya, Gambia and Egypt, with the latter standing to lose as much as 20 per cent of its farmland.

The need now, in many countries, is to give urgent attention to gathering and disseminating whatever information on climate change is available, getting appropriate research under way and drawing up strategies to cope with the most serious and likely contingencies.

impoverish them further.¹ Low productivity on fragile terrain sometimes forces the men to migrate for long periods to paid jobs, thus accentuating the cycle of rural impoverishment. In addition, privileged groups in society often take over the best land for cash crops. In the drought crisis year of 1983-84, when the Sahel needed record food imports to fight off famine, export crops — cotton and groundnuts — produced record harvests for their overseas customers, thanks largely to government and aid agency efforts on their behalf. And for every kilo of groundnuts, a little bit of the Sahel's fertility is lost. Of overseas aid to the Sahel in the early 1980s, only a pittance went towards improving the region's staple food crops.

Faced with unfavourable markets and lack of support, there is research to suggest that some peasants are defending their interests by dropping out of the formal system and producing mainly for their own needs. If this is so, a fundamental question for governments professing the goal of improved food production is how to win them back. The answers, it is generally agreed, include giving them:

- a participatory role in policy and planning,
- support for rural people's organizations,
- more favourable price and credit policies,
- access to farm inputs,
- improved access to markets, especially by strengthening market infrastructure, and

- support for research and development of low-risk and low-external-input strategies.

What will not win poor farmers back are recommendations, such as that contained in Agenda 21, that "priority must be on maintaining and improving the capacity of the higher potential agricultural lands." Concentrating research and investment even more on the richer land and better-off farmers is arguably the opposite of what Africa needs to increase food production.

Land rights for effective conservation Across Africa, many social groups are denied legal rights to land, without which they have little incentive to put long-term conservation before their immediate needs. Though women are the mainstay of farming in Africa, many have no access to land on their own account; in some places, if their husbands have gone away and left the land to them, they have no right to plant trees. Pastoralists suffer from the denial of usage rights to the land their herds graze; as agriculture encroaches on traditional rangelands their mobility is restricted and the remaining pasture more rapidly degraded. Security of tenure for farmers and pastoralists can be collective; it need not imply private ownership. Such rights, with the machinery to guarantee them, could encourage people to become more active in managing their resources.

The need for appropriate research We ought to know why apparently similar soils can support 200 inhabitants per square kilometre in Cameroon but only 40-50 people on the Mossi plateau of Burkina Faso. More research is also needed to enhance existing crop varieties — to make them more drought-resistant, quick-maturing and able to withstand sandstorms, for example — and to test the adaptability of new ones. With biotechnology research being dominated by

3. Ben Wisner, *Power and Need in Africa* (London: Earthscan, 1988).

transnational corporations primarily interested in products for which there is a large commercial market, publicly-funded research is needed to develop crops suited for poor farmers — and consumers — in tropical countries.

Protecting the land The burning of savannah woodland is widespread — to clear land for planting, to eliminate pests or to encourage the regrowth of pasture. Earth-orbiting satellites have detected smoke from Angola drifting across the Atlantic Ocean to as far away as Brazil. Reforestation has been seen as one way to protect denuded land, but projects to date have a poor record. According to an analysis of aid to the francophone Sahel, a total of \$160 mn was spent on forestry projects in that region over the period 1975-82. The result: less than 25,000 hectares were replanted and only two-thirds of that area was later producing a reasonable amount of wood. Across Africa, an average of 3.8 mn hectares of forest were lost each year over the 1981-85 period, but barely 300,000 hectares were planted with new trees.

Turning from forest to farm land conservation, one of the few outstanding successes in Africa has been Kenya's soil conservation programme. Started in 1974 with pilot projects in four districts, it aimed to help people in the hilly farming areas to terrace their land in order to prevent erosion. Within 11 years nearly half a million of the country's farms were terraced, not only protecting the topsoil but giving a dramatic increase in yields of maize and beans. This programme succeeded because its Swedish advisers consulted the farmers from the outset and designed it to meet their needs.

The Kenya scheme has one important thing in common with water harvesting programmes in Burkina Faso, 4,000 kilometres to the west, where stone bunds are used to halt water run-off in the rainy season, improving crop yields by 50 per cent or more where it has been applied: both schemes have built on people's existing knowledge and traditional practices instead of overriding them. Though it will not be easy, many experts believe the best hope of the 1990s is to find ways of adapting and replicating schemes of this kind across the continent.

Improving agricultural production The FAO believes Africa can aim for a 3 per cent annual growth in agricultural output, though it says this will require a sixfold increase in fertilizer use over the next 20 years. Others point out that in the drylands, at least, the continuing decline of farmgate prices relative to the cost of fertilizer inputs is evidence that fertilizers cannot serve as the primary engine of growth, as they have elsewhere in the world. Many believe that agroforestry, and in particular alley cropping — the intermixing of tree crops with others — is a much better hope, which could even become the basis for Africa's own Green Revolution, needing little more than expert skills such as those refined over centuries by the Chagga people of Tanzania (see box on page 10).

The life and death of water Two hundred and forty million Africans, or more than a third of the continent's population, live in countries where available water supplies

per person are said to be decreasing to the minimum needed for life support, given the pressures of population growth and the slow development of water resources. In sub-Saharan Africa just 40 per cent of the population has access to safe water supplies, though in many low-income countries, such as Ethiopia and Sierra Leone, the share is much lower; the rest have to risk water-holes or rivers that are often contaminated. Eighty per cent of illness is attributed to polluted water or poor sanitation, and may account for as much as half of infant mortality. The relationship between large-scale irrigation projects and the spread of water-borne diseases — especially schistosomiasis (or bilharzia) — is also well documented. Some African governments and people's organizations have undertaken significant efforts to make clean water more widely available.

Through the process of development, many women, with an intimate understanding of how to manage their environment on a sustainable basis, have lost even the limited control they had at household and village level.

To have the greatest impact, however, projects need to keep in mind that for the African villager, water is a multi-purpose resource, used not only for drinking and washing but also for animals and small-scale irrigation. Externally designed projects that seek to improve water management for only a single purpose have often disrupted integrated water resource systems that were previously under the control of local communities.

Empowering women The process of development may have liberated a small minority of African women able to gain an education. But at the same time many women, with an intimate understanding of how to manage their environment on a sustainable basis, have become more powerless, losing even the limited control they had as resource managers at household and village level. Critics of Western development strategies in Kenya say the country faces severe environmental and agricultural problems because these strategies have usually dismissed traditional African farming systems and women's central role in them. As prescriptions from outside fail, that role remains pivotal but undervalued. For African women to gain the degree of equality commensurate with their responsibility for social well-being and the care of natural resources will require a transformation from within each society, more than just women-centred aid projects, which can sometimes be counter-productive.

The imperative of migration High levels of rural-to-urban migration are common across Africa, for a variety of economic and environmental reasons, contributing to an an-

Energy and environment

The energy consumption of the average African is barely one-fortieth of that of a person in the major industrial countries. Most of it — ranging between 60 and 95 per cent over much of sub-Saharan Africa — comes from fuelwood for cooking and heating.

In the rural areas this is all that most people can afford. Wood collection is normally women's work and as the surrounding area becomes progressively denuded of trees, gathering fuel for the family hearth means for them a longer and longer trek — or else spending up to one-third of their income to buy it. The impact of intense fuelwood cutting is particularly serious around major urban concentrations, as urban consumer markets draw on wood and charcoal from ever wider areas. Dakar and Khartoum are already reaching out more than 500 km for charcoal supplies.

But other fuels — petrol, oil and gas — are needed for transport, industry, agriculture and urban services even in the poorest countries. Botswana, Mozambique, South Africa, Tanzania and Mozambique all have extensive coal reserves that can be further exploited, although there could be some potentially serious environmental effects.

More use of Africa's greatest untapped source of energy, its many rivers and lakes, could have less damaging environ-

mental impact. Development of this, in preference to perhaps cheaper fuelwood or coal, would be encouraged by additional aid. But safeguards would be needed to ensure that the environmental damage of earlier large-scale schemes is minimized.

In the early 1980s, after the second major leap in world oil prices, Burkina Faso found that nearly three-quarters of all its export earnings were being eaten up by energy imports. Despite concern about some potentially negative effects of large-scale dams, a major hydro-electric scheme, the Komo-pienga dam, was undertaken, designed to meet 20-30 per cent of the nation's power requirements and save a significant part of its annual fuel bill. When that dam was commissioned in 1988, work had already begun on a second and there were plans for a third. Together, it was argued, the three projects could make the country virtually self-sufficient in energy at the beginning of the next century.

Whether or not Burkina's target is achieved, Africa as a whole probably needs to make greater use of its indigenous water resources to produce commercial energy. Besides reducing dependence on imported fuels in those countries without oil, this would also bring down reliance on scarce fuelwood and thereby slow down the process of deforestation.

nual average growth in urban population of 7 per cent, the highest in any world region. In addition, in parts of Africa millions of families have been uprooted by drought, political or ethnic conflicts and civil war. Caravans of the dispossessed, fleeing from bullets and famine, have become a tragic indictment of governments' failure to care for their people. Emergency relief from the outside world can try to cope with the symptoms, but it cannot treat the causes. Nor can foreign agencies address the structural population problem, which is an unbalanced spatial distribution of people and resources. If incentives are proposed to encourage migration away from overcrowded and/or resource-poor areas, the policies and the means of implementing them will have to be determined democratically, within Africa.

Organizing for change If a country does not have the qualified people and effective organizations needed to provide the framework and impetus for sustainable development programmes, attempts to introduce such programmes will be like digging holes in water. Foreign aid donors tend to see this requirement at two levels: first, the need for democratic processes, which some equate with a multi-party political system; and secondly, a need for high-level managers, scientists, engineers and technicians able to run the kind of programmes the donors are used to funding. Many in Africa (and some in the North) see it differently: they say "yes" to a democratic process which guarantees people's civil and political rights, but they are less sure that multi-party politics, by itself, can guarantee those rights or adequately respond to complex realities. While acknowledging the need for a cadre

of highly-skilled managers and technicians, they place more emphasis on human resource development from the bottom up, especially at the level of village groups, self-help associations and the growing force of voluntary development organizations in many countries. Participatory systems will be essential for effective resource-management and environmental protection programmes in Africa, but as pent-up frustrations, discontent and social tensions are released, many problems should also be anticipated.

Good governance for the environment can build on the national plans and conservation strategies which many countries have now drawn up, reinforced by regional co-operation and appropriate support from international agencies such as the UN Environment Programme (UNEP) and UNSO. But too much planning is as bad as not enough. Having produced national plans to combat desertification, many governments find themselves being pursued by different international agencies to prepare Environmental Action Plans, National Conservation Strategies or Tropical Forestry Action Plans. Such exercises can immobilize some of a country's best planners for months at a time or longer. An initiative by UNSO to encourage African governments to adopt a single strategic planning framework should help avoid unnecessary duplication of effort.

The above, then, are just nine from the complex mesh of issues which have a bearing on the who, how and what of sustainability. Clearly there are many aspects of health, housing, education, transport and government spending priorities which will be important, too.

Development from within

From the foregoing review of sustainability issues, two things in particular stand out. One is that the range of environmental and development problems do not fall neatly into the standard sectoral compartments of government or aid agencies. Some are not reflected at all in the structure of such institutions, while others clearly require a multi-sectoral approach. Leading on from this, the second and more fundamental deduction is that these questions cannot for the most part be answered by the conventional models of development, derived from the outside — that they must be addressed instead in the context of what the Dutch Development Minister, Jan Pronk, and others have called “development from within.”

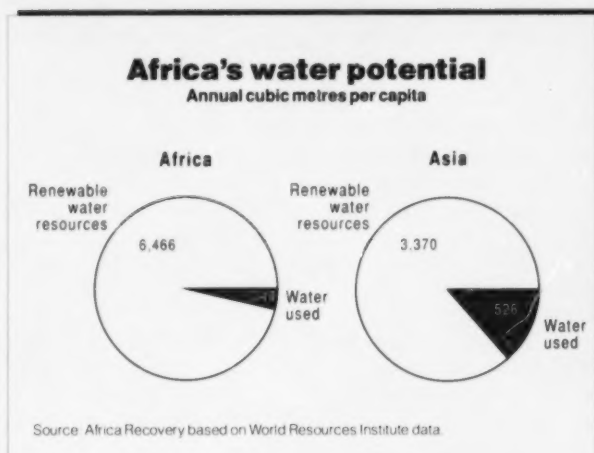
For the emerging intellectual leaders of the new Africa, struggling to throw off a generation of what many perceive as political pseudo-independence, there is a vision of development which goes beyond participation and democracy at national level and which addresses the wider issues of autonomy and collective self-reliance in the international sphere.⁴ This vision starts from an analysis that finds Western development models to have been a key contributor to Africa's crisis. It leads to the assertion that Africa must find its own strategy “without looking for the image of its future in the advanced countries”.⁵

There are, indeed, signs that some moves for a radical African development alternative are once more gaining momentum. This

Any grand designs to achieve sustainable development must be broken down into small packages of a size and shape that ordinary people can not only comprehend but control themselves.

can scarcely be surprising when non-governmental organizations (NGOs) of all continents, in their submission to the UNCED summit in Rio, concluded that “for the unprivileged of the world, development has meant less and less control over their own resources and lives”.⁶

Short of a withdrawal into autarky, efforts to frame a more endogenous alternative pose the question of whether the North would agree to support such a future for Africa. If the calls in



Africa for greater autonomy and self-reliance are to crystallize in any coherent form, the challenge will be not so much to close the door on Northern and international collaboration but rather to find ways of drawing in the North as an auxiliary force in any new order.

Signs of change

Behind the trends and statistics that presage worsening conditions of life in sub-Saharan Africa, there are also signs of positive change which could begin to make a difference before too long. The past three years have seen the sudden collapse of a string of autocratic regimes. Freedom from tyranny has brought, in turn, freedom of information and a ferment of ideas. Mali, alone, has sprouted no fewer than 40 political parties, and some other countries even more.

Recent years have also seen a strong growth in associative movements at local level and in networks of environment and development groups nationally or regionally. National consortia of NGOs are now a feature of the institutional scene in many countries and contribute to an active exchange of ideas and experience, enhancing the work of this sector. While the well-established consortia such as CRDA in Ethiopia, CCA-ONG in Mali and CONGAD in Senegal usually admit both international and national NGO members, the recent proliferation of indigenous voluntary agencies has led to their forming their own associations in some countries. One of them, SECO in Mali, already has over 100 member organizations.

Greater efforts are everywhere apparent in the area of natural resource management, with government programmes showing more readiness to take account of people's needs and aspirations at grassroots level. Simple techniques of community planning are being enthusiastically adopted — notably Participatory Rural Appraisal, which builds on local knowledge and enables peasants to interact with researchers in exploring their development options.

On top of this there are some indications of a greater awareness that regional cooperation will be essential to tackle

4. Bade Onimode et al, *Alternative Development Strategies for Africa: Coalition for Change* (London: Institute for African Alternatives, 1990).

5. Fantu Cheru, *The Silent Revolution in Africa: Debt, Development and Democracy* (London: Zed Books, 1989).

6. Environment Liaison Centre International, *Justice between Peoples - Justice between Generations: a synthesis of citizens movements' responses to environment and development challenges* (Nairobi: 1991).

The Chagga: indigenous knowledge at work

Agroforestry, or the interplanting of trees and crops, is generally considered the preserve of specialists, but for the Chagga people of Tanzania it is simply a big name for something they have been doing for centuries without any external help.

The Chagga live on the southern slopes of Mount Kilimanjaro, where they have developed an extremely refined system of agroforestry and irrigation.* An intimate knowledge of their rainforest environment has led them to apply the best ecological principles in home gardens admired by agronomists and foresters from around the world.

When they settled in the area several hundred years ago, the Chagga cut just enough trees to be able to plant their own banana trees under the forest canopy. Now they grow 15 kinds of bananas, beneath which come coffee bushes and then, below them, a variety of vegetables including aubergines, yams, beans, potatoes, onions and tomatoes. The forest trees provide shade for the crops, animal fodder and mulch for the land, as well as medicines, fruit, nuts, timber for construction

and firewood. The sale of coffee gives the Chagga a cash income.

Water supply coming from the mountain is managed on a cooperative basis and each family's home garden is linked to an intricate network of irrigation and drainage ditches. There used to be a lot of fish in the irrigation channels, too, but an outside adviser persuaded the Chagga to use agri-chemicals to improve their crop production. Pesticides got into the water and the fish died.

With their highly-developed and sustainable techniques, the Chagga are able to support the highest density of population in Tanzania. And while it is true that conditions on the slopes of Kilimanjaro are particularly favourable, some of their methods, like the traditional practices of some other peoples in Africa, should be capable of adaptation to communities elsewhere.

* Herbert Girardet, "How far from paradise?" in Seymour and Girardet, *Far from Paradise* (London: BBC Publications, 1986).

environmental problems and to ensure a more self-reliant path of economic development. This was demonstrated at the 1991 summit of the Organization of African Unity (OAU), where a treaty was signed to establish an African Economic Community, beginning with a strengthening of existing regional economic organizations and moving toward full economic integration over a transitional period of 34 years. The treaty commits African governments to adopt national, regional and continental policies to promote "ecologically rational, economically sound and socially acceptable development policies and programmes." In addition, the Bamako Convention, agreed by the OAU in 1991, bans the import into Africa of toxic wastes and has forced disposal companies in the North to look elsewhere for sites to dump their environmentally dangerous rubbish.

All in all, Africa is heading for the next millennium with an appalling burden of poverty but with the faintly-glimpsed vision of a better future, which, if attainable, will be of its own making. On the immediate agenda, needless to say, there are a number of outstanding issues, some of which will determine the shape of this future.

III. Unanswered questions, outstanding concerns

Prospects for the medium and longer-term future are contingent on the answers to a string of daunting questions. To some we have an incomplete response, others are still lacking any at all. For instance:

- Will Africa have a proportional voice in framing global strategies for sustainability?
- What can be done in advance to protect against the

impact of climate change on different ecological zones? Will the industrialized countries respect the "polluter pays" principle for environmental damage they may cause in Africa, or agree to regard the problem of desertification as a global concern?

- Will there be any increase in resources for essential research to improve Africa's traditional crops, and to develop the continent's biotechnology potential?
- What techniques and incentives will enable peasants to develop more intensive farming systems without increasing soil degradation — and how can local farming successes be made more widely replicable across countries and sub-regions?
- Will more participatory forms of government grant women the rights due to them to match their economic responsibilities?
- How will Northern development agencies seek to rectify their largely dismal record in Africa's forestry and pastoral sectors?
- Will African governments guarantee their people the civil and political rights needed to underpin sustainable resource use?

Much of this was addressed in the UNCED process. But except in broad declarations of principle, which are so often blown away like dust by the harsh winds of African reality, these are not questions which can be practically addressed within such a framework. In the meantime, efforts can be more productively focussed on a number of outstanding issues that should be susceptible to research, negotiation or careful planning.

One perennial stumbling-block for policy-makers is **dis-**

agreement among scientists on the nature or extent of Africa's environment-development problems. Desertification is a case in point. While African governments succeeded in strengthening the emphasis on desertification within the Agenda 21 programme of action, a growing band of dryland experts believes the term in the past has been counter-productive, insofar as it may have led to an overstress on measures to combat the negative symptoms of degradation. Present emphasis, however, accentuates positive steps to improve land management. In the final analysis it will be for planners to get the balance right.

In the meantime, many researchers and African NGOs agree that more needs to be done to achieve **a fusion of traditional/modern values, knowledge and methods**. To save the environment and to diminish poverty, they point out, Africans' imagination, creativity and knowledge of their earth should be harmonized with the scientific rationalism of policy-makers, bankers and experts.⁷

Environment-development trade-offs are often decided with **inadequate information** or understanding of the relative costs. Sometimes this translates as a conflict between urgent, short-term development needs and the longer view required for resource conservation. But if the longer view leads to a government ban on woodcutting to halt deforestation, the

Greater efforts are everywhere apparent in the area of natural resource management, with government programmes showing more readiness to take account of people's needs and aspirations at grassroots level.

trade-off can mean one of two things: either the people suffer for want of fuel or building material, or else they make the government edict counter-productive by burning the dung and crop residues that could have nourished their land. Striking the right balance on environment-development priorities is made harder for governments by the fact that environmentally "dirty" development projects usually contribute more to national income than clean ones. The "African Common Position on Environment and Development," adopted at a November 1991 ministerial meeting in Abidjan, acknowledges that in order to plan for sustainable growth, a system of environmental accounting is needed to measure the direct and indirect cost of proposed development activities.

To feed growing urban populations, it is not enough that

sustainable agricultural practices protect the resources of nature: they must also produce **a marketable surplus**. Whether they do so will depend on:

- the gains in productivity that sustainable practices can achieve,
- pricing policies that give farmers adequate incentives,
- improvements in nutrition levels in food-growing communities, before farmers will sell, and
- market accessibility.

One of the most unyielding conundrums of development in Africa — yet one that could release bountiful results if solved — is **how to scale-up** the micro-projects which have produced the largest share of success stories to date. Such projects are almost always finely tuned to the physical and cultural conditions of a particular locality and have evolved in a step-by-step process. Scaling-up or adaptation to other environments therefore poses many difficulties and the results of such efforts have generally been less than brilliant. Rather than enlarging successful small projects, which can often upset the delicate balance of relationships on which they depend, a more fruitful approach can be to disseminate their experience through networks or federations of small organizations such as the Federation of Groupements Naam in Burkina Faso or the Food Security Task Force of NGOs in Southern Africa.

A further thorny question is whether the numerous governments now introducing democratic systems will be more or less able than their predecessors to commit themselves to a long-term, sustainable agenda. As in the West, playing toward **short-term electoral considerations** can be expected to come to the fore, offsetting in varying degrees the gains of more open and participatory systems. Elected governments face the tempting logic that jam today will buy more votes than ovens for tomorrow's bread.

The importance of concrete **regional cooperation**, already alluded to, remains an outstanding issue of high priority. According to the ECA: "The go-it-alone approach that has characterized Africa's development efforts since independence has proved a total failure. African countries must realize that only by working together will they survive and develop."⁸

Externally, the biggest constraints on a sustainable development path for Africa are **debt, trade and aid** — in effect, all the continent's links to the global economy. The foreign debt of Africa stands at \$280 bn, having doubled over the past decade. African countries' debt repayments swallow 30 per cent of their export earnings and in 1990 more than wiped out all aid received the previous year. The reverse flow of funds to the North is further accentuated by capital flight, royalty payments and the repatriated profits of foreign companies. With

7. Youba Sokona, "Poverty and environment: what to do," *Reflexion*, Vol. 1, No. 4, October 1991 (Reus, Spain: Fundación El Taller).

8. ECA, op. cit.

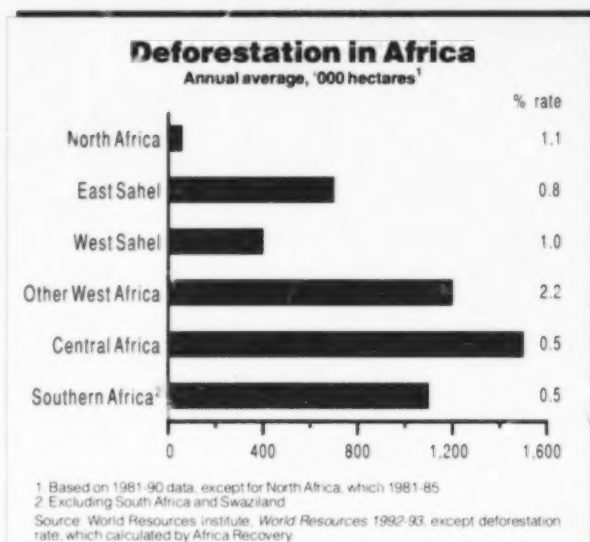
world prices for their primary commodities having fallen through the floor in the past decade, there is no way African countries can recover the ecological cost of producing these goods for Northern consumers. Debt-for-development and debt-conservation swaps have been formulated as a way of marginally reducing the debt burden for some countries, such as Madagascar and Zambia. Under these arrangements, third parties such as Northern NGOs can buy a slice of a developing country's debt at a discount, enabling the country concerned to redeem it in return for a commitment with improving land use or social services. Debt conversions of this kind may, in the best cases, bring environmental benefits; against them, however, have to be weighed the dangers of inappropriate foreign influence or ownership, including possible restrictions on the use of new conservation areas by their traditional inhabitants.

IV. Implementation and finance

In the final analysis, policy reforms in any country — whether for an outward-looking development strategy or one aiming toward greater self-reliance — will only work to the extent that they have popular support and there are effective and adequately-funded mechanisms at all levels to implement them.

Starting from the bottom, people's participation requires that they have full access to information on policy issues in order to be able to make informed judgements. As well as being accountable to the people, local government needs clearly-defined powers and secure revenue. As for the intermediate levels of civil society — covering the business sector, trade unions, professional bodies and NGOs, among others — constraints may include restrictions on their freedom of operation, shortages of skilled personnel and pressure from foreign interests.

At national level, the capacity of governments to deal with environment and development issues depends on getting the structures and instruments right. In some countries the fragmentation of responsibility for environmental planning among numerous government departments results in overlapping or conflicting initiatives. Given the current wave of constitutional reform in Africa, more attention than in the past



will have to be given to power-sharing between the executive and legislative branches of government. This may be particularly sensitive when dealing with areas of social conflict such as between farmers and pastoralists or rival ethnic and social groups. As for decentralization, a clear distinction needs to be made between the genuine *devolution* of power and a mere *delegation* of administrative procedures to local level. The latter can sometimes have the effect of reducing local autonomy.

In the end, after weighing up all the attractions of a sustainable development strategy, there comes the moment when one has to weigh the price tag. The UNCED Secretariat placed the global cost at \$125 bn a year. That is the amount of external concessional funding they reckon Agenda 21 will require for its programmes on agriculture, health, technology transfer, biodiversity, etc., or \$70 bn a year on top of current development aid levels of \$55 bn annually. From one angle, it is a modest price for protecting the world. From another, given that much of foreign aid has been shown to have little or no effect on existing patterns of income inequality, the question is how a sum of this magnitude, even if it were made available, could be spent effectively to the benefit of the poor.

A number of Africa specialists fear an emphasis on external funding will distract attention from the slow, patient and mostly small-scale efforts which have been built up in recent years and which have borne more fruit than almost any others. The crucial question is how any increased financing for sustainable development can support those efforts.

The epitaph for the conventional development approach in Africa can perhaps be found in one development agency's project report from Kenya. "Nothing that was planned was achieved," it said, "and nothing that was achieved was planned."

For Africa to be able to assert its own development models will require the strength and the will to master powerful conflicting forces. There is presently a vicious downward spiral in which debt and dependency, environmental degradation, the impact of AIDS and loss of biodiversity tend to become mutually reinforcing.

Yet while the landscape may be bleak, the courage, perseverance and creativity of the African people are seeds of a new growth beneath the surface, striving to break through.



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